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Agricultural Engineering.

Engineering frontiers in agriculture. By L.F. Livingston. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 501-502. Five distinct lines of approach which when followed will show surprising results: 1. In our colleges teaching force of agricultural engineering departments must go farther than they have in the past to make students realize the possible place for trained agricultural engineer. 2. In our experiment stations whenever any project is considered that project should be analyzed, and those in charge shown that portion of project which an agricultural engineer can do better than anyone else. 3. Through increased publicity both direct and indirect, we can and must show more leaders in fields other than agriculture the financial advantage of engineered agriculture. 4. In college extension work we must make entire extension group appreciate what farmer is losing through lack of adequate education and leadership in agricultural engineering, primarily within individual counties. 5. In industrial extension (where that industry is dealing directly with agriculture) we must show the value to that industry of having extension specialists in the field, helping farm pay through engineering.

Agriculture.

Adaptation of agricultural system to sub-humid environment. Agricultural History. v. 10, no. 3. July, 1936. p. 118-141. Illustrated by activities of Wayne Township Farmers' Club of Edwards County, Kansas, 1886-1893.

Chemistry aids agriculture. Dupont Magazine. v. 30, no.9. September, 1936. p. 1-4, 21, 24.

Air Conditioning.

Air conditioning of bananas. Ice and Cold Storage. v. 39, no. 463. October, 1936. p. 159. Latest type of railhead installation.

Comfort cooling with use of ice. Ice and Refrigeration. v. 91, no. 5. November, 1936. p. 359-361. Information on use of ice for comfort cooling compiled by Technical Committee of the California Association of Ice Industries.

Cooling requirements for summer comfort air conditioning. By F.C. Houghten, F.E. Giesecke, Cyril Tasker and Carl Gutberlet. Heating, Piping and Air Conditioning. v. 8, no. 12. December, 1936. p. 681-692. Continued study was planned so as to give added information on following points: 1. Desirable atmospheric conditions as regards temperature and humidity in still air for comfort in summer air conditioning, together with any variation in these requirements for different geographical regions having different weather conditions. 2. Allowable variations in relative

humidity of air with optimum conditions of effective temperature, and any variation in time required for disappearance of sensible perspiration with variations in moisture content of the air. 3. Variation in required effective temperature for comfort depending upon age, sex and general health conditions of persons involved. 4. Effect of amount of clothing worn, particularly effect of coats worn by men, on desired effective temperature. 5. Effect of air velocities, above those usually used in air conditioning, on cooling requirements. 6. Characteristics and seriousness of cold shock felt upon entering a cooled space in summer, together with duration of shock and subsequent physiological reactions, or sensations up to time when complete comfort is established. 7. Physiological reactions and sensations of a person leaving a cooled space and re-entering the hot outside, and duration of these reactions. This report deals with results of continued study during the summer of 1936, and gives extensive facts concerning items 1 to 4 above, and some added information concerning items 5 to 7.

Evaporative cooling for comfort, with some references to theory of film surfaces. By Walter L. Fleisher. Refrigerating Engineering. v. 32, no. 6. December, 1936. p. 409-420. Paper describes (1) general theory of adiabatic saturation, (2) basis on which evaporative cooling methods may lead to comfortable conditions, (3) theoretical method of obtaining these conditions, and (4) an apparatus that has been developed. Climatic data are introduced, as well as discussion of comfort charts. In summary, at end of paper, author offers number of answers to question of whether material presented is warranted by timeliness and as a contribution to present art of air conditioning.

Homemade weather. By Neil M. Clark. Country Gentleman. v. 107, no. 1. January, 1937. p. 5-6, 62-63.

"Submarine house" is cooled by roof waterfall. Popular Mechanics. v. 66, no. 4. October, 1936. p. 538-539. Over one-room structure they install a shed with wood roof. In space between wood roof and sheet-iron roof is water pipe with holes cut at intervals. When water is turned on, it streams from holes and cascades over roof and down sheet-iron sides. Inside an electric fan circulates air. Temperatures are 20 to 35 degrees cooler than those outside.

Alcohol Fuel.

Motor fuel by-products. By Samuel S. Bailey. New Agriculture. v. 19, no. 1. October, 1936. p. 8. Alcohol motor fuel vs. gasoline. By-product carbon dioxide from distillation process. CO_2 gas as aid to doctor. Medicinal values of carbonated waters.

Motor fuel by-products. By Samuel S. Bailey. New Agriculture. v. 19, no. 2. November, 1936. p. 8. Alcohol motor fuel vs. gasoline.

Motor fuel by-products. By Samuel S. Bailey. New Agriculture. v. 19, no. 3. December, 1936. p. 8. Alcohol motor fuel vs. gasoline.

Belts.

Belts for variable load. Power Plant Engineering. v. 40, no. 12. December, 1936. p. 718-719. Essentials for good belt drive are: Belt with high coefficient of friction on pulley to be used. Ample width to carry maximum load with minimum slip and wear. Provision for maintaining belt tension uniform at value required to carry load.

Bricks.

Glass bricks replace windows. Lower maintenance costs and reduce condensation in air conditioned plant. By L. Duckmann. Heating, Piping and Air Conditioning. v. 8, no. 12. December, 1936. p. 656.

Building Construction.

Bricks hung on metal hooks cut modernizing cost. Popular Mechanics. v. 66, no. 4. October, 1936. p. 487. Old frame and stucco houses can be given new brick walls at small outlay, since no additional foundation is required and three-fourths inch brick veneer, made of same materials and in same colors as regular face brick, is easily applied over old wall. On back of brick veneer slabs is dovetail slot, centered so that brick is reversible. Before hanging bricks, a stiff, copper-bearing metal mesh "curtain" is securely anchored to old wall. Projecting hooks or prongs on this patented mesh fit into slot of brick slabs, mesh thus helping support weight of bricks. Mortar is applied to slotted back before brick is "hung." Cost of modernizing frame house by this method is repaid in short period of years by reduced maintenance costs. One large house which had recurring paint bill of $400 was brick-veneered by this contractor for $1,100. Pattern of hooks in mesh curtain assures perfect alignment of bricks.

Determining beam deflections without integrating. By Odd Albert. Engineering News-Record. v. 117, no. 24. December 10, 1936. p. 828-829. Considering simple beam as divided into two fixed cantilevers simplifies an otherwise difficult calculation.

Glued wall system replaces lath and plaster. Popular Mechanics. v.66, no. 4. October, 1936. p. 545. Making lathing and plastering unnecessary, a new glued wall system employs glue instead of nails in vital part of joint construction. In addition wall is strong and crackless. System calls for nailing of patented strips of fir plywood to studdings, rafters and headings. Then comes gluing and panels of plywood or wallboard to these strips and edge gluing of panels to each other to form solid one-piece wall. Because of self-bonding nature of glue no excessive pressure is necessary to get tight fit. Shrinkage and expansion of wood are not transmitted to surface of wall. Wall can be decorated to look like regular plaster walls, but glued panels will not shift and cause cracking.

Concrete.

Tests on shrinkage of concrete. By J.R. Shank. Engineering Experiment Station News (Ohio State University). v. 8, no. 4. October, 1936. p. 6-10.

Conservation.

Three Ohio conservancy projects. By C.E. Sherman. Engineering Experiment Station News, Ohio State University. v. 8, no. 2. April, 1936. p. 13-15.

Corrosion.

Fight deadly corrosion to save your motor. Popular Mechanics. v. 66, no. 4. October, 1936. p. 568-571.

Stainless steel corrosion. Ice and cold storage. v. 39, no. 463. October, 1936. p. 156. Pitting caused by leather.

Cost of Production.

Seasonal costs and returns in producing milk in Orange County, New York. By L.C. Cunningham. 1935. 41p. Cornell University. Agricultural Experiment Station Bulletin no. 641.

Dairy Farm Equipment.

Energy consumption of large churns. By Jefferson B. Rodgers. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 516-517. Recent study conducted by departments of agricultural engineering and dairy husbandry of University of Idaho, in cooperation with managements of two large representative Idaho creameries, resulted in collection of valuable data on electric power requirements of creamery equipment

Dams.

Dam building reaches a climax. By Robert A. Sutherland. Engineering News-Record. v. 117, no. 24. December 10, 1936. p. 807-815. Present decade marked by completion of dams of unprecedented heights and ever increasing volume in major classification of gravity section, arch, buttress, and earth and rockfill.

How shall height of dams be measured? Engineering News-Record. v. 117, no. 24. December 10, 1936. p. 816-817. Suggestion of consideration relevant to definition of height. Recommendation from authoritative committee needed.

Dehydrators.

Chili pepper dehydrator. By L.E. Holmes. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 20. Summary as to advantages of this type of dehydrator over kiln type includes following: 1. Saves labor. 2. Less volume required for drying. 3. Better products and less shrinkage. 4. No moldy or burned peppers. 5. Less sorting. 6. Higher percentage of no. 1 peppers. 7. Cleanliness.

Corn drying investigations of the Oregon Experiment Station. By F.E. Price and Ivan Branton. C.R.E.A. News Letter. no. 14. December 10, 1936. p.7-9. Experiments have been conducted in the dehydration of ear corn, and equipment has been designed and used for the drying of shelled green corn.

Dehydrators. (Cont'd)

Wisconsin seed corn drier. By F.W. Duffee. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 5-7. Gives floor plan of a simple Wisconsin corn drier.

Depreciation.

Special cases in depreciation. By William D. Ennis. Mechanical Engineering. v. 58, no. 10. October, 1936. p. 638.

Diesels.

Diesel engineering instreuction. By F.C. Hechler. Mechanical Engineering. v. 58, no. 10. October, 1936. p. 635-637.

Drain Tile.

Improving drain tile resistance to alkali conditions. By Dalton G. Miller. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 513-515, 544. Paper is based on results of observations of experimental specimens subjected to artificial sulphate solutions in laboratory, and to behavior of specimens installed under natural field exposure conditions in Minnesota and North Dakota, and in Medicine Lake, South Dakota.

Drainage.

Drainage and irrigation. By George K. Parker. New Agriculture. v. 19, no. 1. October, 1936. p. 9.

Origins of Appalachian drainage. By H.A. Mayerhoff and E.W. Olmsted. American Journal of Science. v. 32, no. 187. July, 1936. p. 21-42.

Pumping outlets for tile drainage systems. By H.B. Roe. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 26-27. Essential features: 1. Sump or cistern 6 to 8 feet square, with reinforced concrete walls, bottom and cover, and of sufficient depth to receive water from tile main, to permit setting pump 3 feet or more below mouth of drain, and a foot above bottom of sump. (Sump should be located on higher ground at margin of low area to prevent danger of flooding of pump house and motor.) 2. Vertical centrifugal pump, electrically driven, that will readily remove maximum runoff from main as fast as it comes. 3. Electric motor of sufficient horsepower to operate pump easily under maximum load. 4. Float valve connecting with master switch of motor, adjustable to enable it to start motor automatically at any desired height of water in sump, and, when it drops below this point, to throw switch and shut off motor. 5. Conduit of capacity several times that needed to carry water, to receive it from pukp discharge and conduct it quietly to final outlet stream or basin. 6. Pump house of any suitable building material and equipped either with large scuttle in roof directly over motor, or with sliding roof to permit of drawing pump for repairs. 7. Manhole and inspection ladder to bottom of sump.

Advantages: It gives farmer an independent drainage outlet and, by proper adjustment of automatic feature, he can control water level in drained area to considerable extent and, in dry years, retain water in these low areas which yield best crops.

Drying of Fruits and Vegetables.

Hop curing. Rural Electrification and Electro-Farming. v. 12, no.137. October, 1936. p. 95-97. In common with many other processes, farming and otherwise, the curing of hops has undergone many changes since the earliest days. The present position is here reviewed.

Earth Pressure.

Theory or arch action in granular media. By Ralph D. Doner. Agricultural Engineering. v. 17, no. 7. July, 1936. p. 299-304. Paper sets forth in form of theory mathematically derived laws involved in explanation of arch action. Frequent checking of theory with data was made throughout this development, and indicated that two were essentially in accord.

Electric Power.

Electrical power usage in Vermont cooperative creameries. By O.M. Camburn. 1935. 8p. Vermont. Agricultural Experiment Station Bulletin no. 388.

Electricity Distribution.

Cooperation in the extension of electric service to the farm. By David S. Weaver. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 507-508.

Electricity on the Farm.

Effect of farmstead organization on use of electricity. By G.R. Shier. C.R. E.A. News Letter. no. 14. December 10, 1936. Summarized comments: 1. Increase in intensity with which farms are operated by increase in densith of rural population, and by increase in number of farms in given area. This, of course, is of immediate interest to industry which you represent. Further, it could be a factor in solution of some of our unemployment problems. 2. An increase in farm improvement will necessarily be accompanied by increased demand for industrial goods which will also have its beneficial effect upon the electric industry as a whole. 3. Increase in intensive farming means more food of better quality and reduction of our surplus cash crops, with its attendant beneficial effects upon prices of these same cash crops, thus assisting portion of general farmers who do not or cannot improve their operating schedules and programs. 4. Increased improvements will mean less danger from drought and pests, and a more stable market since improved farms tend to have better control over these things than do general farms.

Electricity on the Farm. (Cont'd)

Electric incubation. By A.H. Rankin and W. LePage. Rural Electrification and Electro-Farming. v. 12, no. 138. November, 1936. p. 118-121. First of series of authoritative articles on electricity and poultry farming.

Electric pig brooders. By J.R. Tavernetti. C.R.E.A. News Letter. v. 14. December 10, 1936. p. 10-11.

Pollock automatic time poultry feeder. By J.C. Scott. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 24. Gives diagram.

Electrification on Arkansas farms. By Elbert E. Karns. Farm and Ranch. v. 55, no. 19. October 1, 1936. p. 20.

Looking ahead in rural electrification in Rhode Island. By G.L. Munroe. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 22-24.

Electricity in better farm management. By Hobart Beresford. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 506. Many statements were obtained relative to relation of electric service to farm management. Among these statements were discussions furnished by various division managers of Idaho Power Company, who through their intimate contact with electric service problems are in position to contribute valuable suggestions as to influence of electric service on farm management. One of the ideas presented was that electric service made possible actual functioning of cost accounting system on the farm. More time is made available to devote to cost accounting needs, and electric light makes it possible to do cost accounting work, in spite of the fact that it might necessarily have to be done after hours. Another real and yet intangible value of electric service to farm management is made through its contribution to standard of living.

Research at California Experiment Station, Davis, California. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 9-10. Progress Report.

Rural electrification in Vermont. By H.N. Stapleton. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 16-18.

Scientific poultry farm electrifies. By B.H. Miller. Electrical World. v. 106, no. 45. November 7, 1936. p. 50-51. Electric incubators, hatcher, brooders, air-conditioned laying rooms, a complete feed-grinding mill, cold storage rooms and feed conveyors are among the innovations on Maryland farm.

Warm pigs electrically. Breeder's Gazette. v. 101, no. 11. November, 1936. p. 10-11, 14.

Erosion Control.

Erosion control in the Tennessee Valley. By J.H. Nicholson. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 509-510.

Erosion Control. (Cont'd)

Self-help in Appanoose. By Robert H. Reed. Country Gentleman. v. no. November, 1936. p. 12, 38.

Soil conservation now the farmer's own job. By W.A. Steel. Implement Record. v. 33, no. 11. November, 1936. p. 18. Farmers in every community have been made acutely conscious of fact that rain-water can be efficiently trapped in fields, and stored by seepage against drought - by terracing; that erosion by sheet-washing and gullying in heavy rains and terrific dust-storms can be prevented by terracing; that water-logged acres can be brought into full production by ditching. In addition to saving their land farmers now have added incentive in provision of new soil conservation and domestic allotment act for payments to farmer up to $2 an acre for terracing - more than enough in most cases for labor and fuel if he uses his own individual tools.

Fans.

Application of fans to industrial refrigerating systems. By E.J. Cork. Refrigeration, Cold Storage and Air Conditioning. v. 7, no. 6. September 30, 1936. p. 15, 17. Treats matter in general way only, covering two possibilities; firstly - way in which one may err, and secondly, simple illustration of how a simple application may be of great value.

Farm Buildings.

Slat house more than pays for itself. By A.H. Carter. American Home. v. 16, no. 2. July, 1936. p. 15-16, 77-78. Costs less than $15.

Farm Machinery and Equipment.

Cost of operating farm equipment. Better Farm Equipment and Methods. v. 9, no. 4. December, 1936. p. 16.

Development of offset disk harrows. By O.W. Sjogren. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 503-505. Main requirements of offset disk harrows may be set forth as follows: 1. Must work in all types of soil and handle cover crops satisfactorily. 2. Must be of sufficient weight and of proper design to give continuous operation and long life. 3. Must work at uniform depth throughout its entire width. 4. Must stir entire ground area to depth worked. 5. Must offset to right or to left with equal facility and operate without side draft. 6. Must remain in cutting angle on hills or hard ground. 7. Must be able to turn to right or left with equal facility. 8. Must be able to back up readily. 9. Must be of low-down construction.

Federation to issue trade allowance book. Implement Record. v. 33, no. 11. November, 1936. p. 14. By December a compilation of suggested trade allowances and tractor depreciation tables will be issued by National Federation Implement Dealers Associations, to be sold and dis-

Farm Machinery & Equipment. (Cont'd)

tributed to dealers all over country as an educational and constructive measure in adjusting inequalities in such allowances.

Good equipment. By G.W. McCuen. Ohio Farmer. v. 178, no. 10. November 7, 1936. p. 19, 31. Insures timeliness of operations - reduces cost of production, increases comfort of operator.

Lister leaves small dams in furrows to hold water. Popular Mechanics. v. 66, no. 4. October, 1936. p. 560. To protect valuable soil from washing away and to help hold water on field new farm machine has been tested successfully in Kansas. It is basin lister which serves double purpose of preparing ground for crops and of leaving dams in furrows. U-shaped piece of metal that fits into furrow is dragged along collecting dirt for about ten feet, then nub on lister wheel catches bar to which shovel is attached and causes it to lift, depositing pile of dirt at intervals in furrow. These dirt piles act as dams when it rains, holding water in furrow and resulting in unusual penetration of moisture into ground. Tests at Fort Hays Experiment Station showed that water soaked twenty inches into ground when basin lister was used. Where ordinary lister was used soil was moist only twelve inches. Land not worked was soaked ten inches. Dams thrown up by lister also keep topsoil from washing off field during heavy rains.

Origin of our modern seed drill is a relatively obsecure bit of history in which many conflicting claims are presented. Fertilizer Review. v. 11, no. 5. November-December, 1936. p. 13. Summary of available information on the subject.

"Saving the surface" not enough. Farm Machinery and Equipment. no. 1835. November 15, 1936. p. 9. Even more important, the "inside" of farm equipment must be protected.

Why vegetable farms are mechanized. Market Growers Journal. v. 59, no. 9. November 1, 1936. p. 436. Some of the mechanical and scientific ways of cutting overhead as practiced on a corporate farm.

Feed Grinders and Grinding.

Feed grinding. By I.P. Blauser. Electricity on the Farm. v. 9, no.11. November, 1936. p. 7-10.

New buhr type feed mill. By F.W. Duffee. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 24-26. To summarize: 1. Mill grinds slowly but very cheaply. 2. It is well built and durable. 3. It operates with a small inexpensive motor - 3/4 to 3 horsepower. 4. It is safe and convenient to install and use. Table 7. Approximate rates of grinding pounds per hour. Table 8. Cost of grinding to various degrees of fineness with different rates for electricity. Cost is given in cents per 100 pounds of grain ground.

Flax.

Spoonful of flaxseed. By J. Sidney Cates. Country Gentleman. v. 107, no. 1. January, 1937. p. 21, 69.

Floods and Flood Control.

Water conservation and flood control. Engineering News-Record. v. 117, no. 24. December 10, 1936. p. 823-827. To save wasted flow for summer supply, and to prevent destructive floods of the Tennessee the engineers had to forecast water supply variations, compare different regulation plans, and decide on best storage.

Flow of Water.

Better flow formulas: Letter from George G. Commons. Engineering News-Record. v. 117, no. 21. November 19, 1936. p. 726-727. With establishment of National Hydraulic Laboratory time seems ripe for critical examination of formulas for flow in open channels. Part of this work can be done only in well equipped laboratory, part must be done in field. It may be that one or more of our present formulas is as near an approach to a correct formula as can readily be obtained. If such is the case, this fact should be thoroughly established by experiment. This research should be made with an open mind, and with the purpose of developing and providing best possible formula.

Comparison of sluice-gate discharge in model and prototype: Discussion. By Raymond Boucher and H.E. Hurst. Proceedings of American Society of Civil Engineers. v. 62, no. 5. May, 1936. p. 613-816.

Grain Storage.

Heat and moisture in stored grain. By Edgar S. Miller. Grain & Feed Journals. v. 76, no. 12. June 24, 1936. p. 503.

Heaters.

Domestic oil burners. By A.H. Senner. Mechanical Engineering. v. 58, no. 11. November, 1936. p. 705-712, 728. Description of common types of burners and results of laboratory tests on them.

Performance of oil-fired, warm-air furnaces in the research residence. By A.P. Kratz and S. Konzo. Heating, Piping and Air Conditioning. v. 8, no. 12. December, 1936. p. 693-704.

Hotbeds.

Buried sunshine in Arkansas. By Edgar B. Chestnutt. Electricity on the Farm. v. 9, no. 11. November, 1936. p. 11-13.

Hydraulics.

Hydrologic data collection recommended by Water Committee. Engineering News-Record. v. 117, no. 19. November 5, 1936. p. 641-643. Estab-

Hydraulics. (Cont'd)

lishment of more adequate facilities for observing and recording data would remedy current deficiencies in knowledge of water behavior which in part are responsible for dam failures.

Reynolds number. By Boris A. Bakhmeteff. Mechanical Engineering. v. 58, no. 10. October, 1936. p. 625-630. Simplified explanation of significance of this important quantity, and examples of its use in aerodynamics and hydraulics.

Insulation.

Diffusion of water through insulating materials - rubber, synthetic resins, and other organics. By R.L. Taylor, D.B. Hermann and A.R. Kemp. Industrial and Engineering Chemistry. v. 28, no. 11. November, 1936. p. 1255-1263. Data are presented on rate of water diffusion through various organic materials. Diffusion constant based on Fick's linear diffusion law is calculated for each material. Several equations are derived from Fick's law to show how valuable information can be obtained in connection with practical problems. Effect of variations in methods and conditions of test is studied. Rate of diffusion through a water-sorbing material such as rubber does not obey Fick's law when under diffusion conditions favoring high water sorption. Various concepts involving sorption and diffusion processes are discussed as bearing upon mechanism of diffusion of water through organic substances.

Strange mineral for insulation is like cork. Popular Mechanics. v.66, no. 4. October, 1936. p. 543. Vermiculite, strange mineral which floats on water after treatment, is latest insulating material for electric refrigerators and hot-water heaters. In raw state it resembles mica, and is obtained principally from a mountain in Montana. Exposure to low heats causes it to expand twenty-seven times its original volume, take on golden color and assume lightness and toughness of cork. It also is fire resistant.

Irrigation.

Ancient irrigation methods are yielding place to new. By Arthur M. Ferguson. New Agriculture. v. 19, no. 3. December, 1936. Overhead irrigation applies water in form of rain with advantage over nature of perfect control as to time and duration of application - rainfall when and where needed and in just right amount. There is no waste of water - distribution is even and controlled - and no grading or leveling with consequent movement of top soil is necessary. Erosion is not a problem with this system, and soil fertility is maintained at its maximum.

Big irrigarion project finished in India. Engineering News-Record. v. 118, no. 1. January 7, 1937. p. 34. Lloyd Barrage at Sukkur, India, 6,500,000-acre irrigation project was completed recently. Barage, equipped with sluice gates and regulators, has length of 4,500 feet. Seven main canals of irrigation system radiate from site. Total length of main line canals and branches is 1,600 miles,

and there are 4,622 miles of distributing canals. Construction of barrage and canal system involved about 210,000,000 cubic yards of excavation.

Concrete saves water. Arizona Producer. v. 15, no. 18. December 1, 1936. p. 3. Underground pipes at Chandler Heights cut draft on pumps a fourth. All water is pumped, so reduction in amount necessary for irrigation cuts power bill almost $2,000 a year. Larger heads of water are delivered to groves, span irrigation requires less time and labor. Cost of maintaining 19 miles of ditch in sandy ground is eliminated.

Do you irrigate your orchard deep enough? By J.H. Currie. Pacific Rural Press. v. 132, no. 17. October 24, 1936. p. 453.

Irrigation losses continue: Editorial. Engineering News-Record. v. 117, no. 21. November 19, 1936. p. 729.

Irrigation moving East. Utah Farmer. v. 57, no. 8. November 25, 1936. p. 5. Fruit and truck crops may suffer from drought, even in humid eastern states where normal rainfall averages as high as 50 inches or more a year. In other words, crops frequently suffer from lack of water during critical wekks of growth, even in areas of heavy rainfall.

Land Utilization.

An agronomist looks at land use. By R.M. Salter. Fertilizer Review. v. 11, no, 5. November-December, 1936. p. 6-7, 12. Suggests that while program may not be a panacea for all ills of agriculture it can hel- - particularly if approach to problem is made from slightly different angle.

Lubricants.

Common lubricating oil tests. By J.B. Torrance. Implement and Tractor. v. 51, no. 25. December 12, 1936. p. 36.

Diesel lubricants. By C.M. Larson. Power Plant Engineering. v. 40, no. 12. December, 1936. p. 698-699. Lubricants should resist changes in viscosity, carbon content and acidity during operation the author tells the A.S.M.E. at Ann Arbor.

X-ray diffraction studies of lubricants. By George L. Clark, Robert R. Sterrett and Bert H. Lincoln. Industrial and Engineering Chemistry. v. 28, no. 11. November, 1936. p. 1318-1322. Number of organic compounds, particularly chlorinated derivatives, which possess some possibilities as addition agents to lubricating oils in enhancing film strengths and general performance, were subjected to x-ray diffraction analysis as thin solid films on suitable metal surfaces. In many cases unsubstituted compound and chlorinated derivative orient equally well, but chlorinated esters of long-chain acid, short-chain alcohol type are markedly superior to unchlorinated esters in preferred molecular orienta-

Lubricants. (Cont'd)

tion and doubling of molecules in each layer; this accounts in part for increased film strength of oil blends containing these addition agents. Degree of molecular orientation depends upon metal used in bearing surface, as shown by comparison of films on copper, iron, zinc, cadmium and brass. Films built up from uni-molecular layers by technic originally proposed by Blodgett and Langmuir to known thickness have been studied in terms of fundamental behavior in diffracting x-rays, and correlation of structure and orientation with lubricating mechanism. Remarkable ability of polar addition compounds, such as methyl and ethyl esters of chlorinated long-chain acids when present in very small amounts, to improve orientation of hydrocarbon molecules in films is demonstrated from diffraction patterns.

X-ray method of rating lubricants in terms of protection against surface wear. Industrial and Engineering Chemistry. v. 28, no. 11. November, 1936. p. 1326-1328. Fiber structure of brass pins used in Almen machine makes it possible to estimate surface wear by employing x-ray diffraction methods. The pins were lubricated by various blends and run under constant load for a given time. Patterns of the pins were taken before and after use; amount of fibering was determined by microphotometer analysis. Results demonstrate that blends with certain addition agents which tend to increase film strength also decrease abrasive wear between rubbing surfaces, as compared with straight oils.

Metals.

Strength and elastic properties of cast iron in tension, compression flexure, and combined tension and flexure. By W. J. Schlick and Bernard A. Moore. 1936. 95p. Iowa Engineering Experiment Station Bulletin no. 127. Investigations reported were suggested by realization of need for further study of this relationship (1) to insure that it was sufficiently general and exact for such use and (2) to extend general knowledge of action of this material under flexural loads.

Study of torque and its influencing factors as related to commercial tapping of metals. By Harry L. Daasch and John Hug. 1935. 52p. Iowa Engineering Experiment Station Bulletin no. 123.

Miscellaneous.

Cooperation between industry and research agencies. By L.J. Fletcher. Implement and and Tractor.. v. 51, no. 22. October 31, 1936. p. 10-11, 24. Benefits from plan would be (1) Technical assistance in planning projects, and advice during their execution. (2) More ready acceptance of findings of Experiment Stations by industry, with quicker benefits to public. (3) Shifting of research efforts from less to more important projects of phases of projects. (4) Better relations with industry for securing assistance in way of materials and equipment for both research and teaching. (5) Better

Miscellaneous. (Cont'd)

relationship with industry for placing of Agricultural Engineering graduates. (6) Prevention of repetition of investigations already completed, or satisfactorily under way. Obstacles to universal use of plan: (1) Possibility of undue influence by powerful industrial gr groups, or at least public suspicion of such influence. (2) Possibility of unfair acquisition of, or suppression of ideas developed by publicly supported research agencies. (3) Possibility of loss of credit to other research institutions.

Drouths in Ohio; especially those of 1930, 1934 and 1936. By William H. Alexander. Engineering Experiment Station News (Ohio State University.) v. 8, no. 4. October, 1936. p. 11-12.

Engineer on the witness stand. By Martin T. Bennett. Engineering News-Record. v. 117, no. 21. November 19, 1936. p. 708-711. Special qualifications that should be developed by engineers who may be called to appear as expert witnesses before public utility commissions, or in court cases.

How army engineers keep costs. By James P. LaCroix. Engineering News-Record. v. 117, no. 25. December 17, 1936. p. 849-853. Review of nonmilitary work performed by Corps of Engineers, and how its cost is kept and reported.

Planning for economic performance. By Walter Rautenstrauch. Mechanical Engineering. v. 58, no. 10. October, 1936. p. 631-634.

Motors.

Barn machinery. Rural Electrification and Electro-Farming. v. 12, no. 138. November, 1936. p. 126. Economical and efficient drive by electric motor.

Selecting the motor for a machine drive. By H.C. Charles. Industrial Power. v. 31, no. December, 1936. p. 117-120. Supplies practical information helpful in making intelligent choice of motors for certain conditions.

Small electric generator supplies light for cabin. Popular Mechanics. v. 66, no. 4. October, 1936. p. 566. Weighing only forty pounds, portable electric generating plant supplies enough current to light six 25-watt lamps, sufficient for small house, summer cottage or camp. Its four-cycle gasoline engine is air-cooled and runs sixteen hours on a gallon of fuel. There is rope and pulley type starter for emergencies, but manually operated switch allows generator to crank itself, using current from automobile type battery of six or twelve volts, same voltage as plant. Generator keeps battery properly charged.

Plants, Effect of Light on

Effect of narrow ranges of wave-lengths of radiant energy, and other factors, on the reproductive growth of long-day and short-day plants. By N.A. Schappelle. 1936. 33p. Cornell University. Agricultural Experiment Station. Memoir no. 185.

Plows and Plowing.

Plowing methods and bigger cotton yields. By Alexander Nunn. Progressive Farmer. v. 51, no. 12. December, 1936. p. 10. Experimental work such as that now available on Greenville soils is needed on other typical cotton soils; it seems to us fairly safe, however, to say that for either the tractor or mule farmer on any heavy clay soils results offer definite lessons: 1. That elaborately prepared, highly pulverized seedbeds are not always desirable. 2. That breaking up to greater depth than four inches is desirable. 3. That early breaking can be profitably followed to avoid heavy spring rush. 4. That when differences in seedbed preparation methods can give nearly 300 pounds difference in seed cotton per acre, proper tillage before planting is tremendously important.

Poultry Houses and Equipment.

Air conditioned poultry brooder house. By John E. Nicholas and E.W. Callenbach. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 518-521. Summary: 1. Insulation plays integral part in maintaining desired temperatures and humidities in poultry brooder houses. 2. It was impossible to hold brooder houses at temperature of 53 degrees without refrigeration, even in winter brooding. 3. There was wide difference in relative humidity between "cold" and "hot" houses when moisture was not supplied in latter in first series. 4. Difference in relative humidities in "cold" houses 19 and 20 without additional moisture was but one per cent. In "hot" houses 21 and 22 with additional moisture in second series, difference was 3 per cent. This is probably due, in part, to variation in number of air changes in respective houses.

Sand bed brooder. By Spencer Bishop. Pacific Rural Press. v. 132, no. 16. October 17, 1936. p. 421. Gives diagram.

Water trough for chickens. Pacific Rural Press. v. 132, no. 17. October 24, 1936. p. 459. Gives diagram.

Public Works.

Contractors count Federal funds for public works. Engineering News-Record. v. 117, no. 23. December 3, 1936. p. 788-789. A.G.C. makes a survey of the money appropriated or authorized by Congress for public works, and of the amounts remaining for future expenditures on construction.

Pumps and Pumping.

Electric pumps economical. Farm Machinery and Equipment. no. 1835, p. 32. It takes less than penny's worth of current for electric motor to pump as much water as strong man can pump and carry in an hour.

Pumps and Pumping. (Cont'd)

Orange County irrigation pump study. By J.R. Tavernetti. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 11-12. Purpose of this study was to compare differences in costs between group and individually owned pumping plants operating in Orange County.

Pumps for dry years. Nebraska Farmer. v. 79, no. 1. January 2, 1937. p. 25. Following procedure for farmers interested in irrigation: First, topographical surveys to determine if farm is suitable for irrigation, and to select best location for pump; Second, sink test well to determine depth and quantity of water; Third, select experienced well driller to put down irrigation well; Fourth, buy good pumping equipment. Fifth, survey farm for fields and ditch layouts; Sixth, prepare land properly for irrigation; Seventh, increase soil fertility; Eighth use water intelligently.

Uses head to save feet. By D.S. Weaver. Southern Planter. v. 97, no. 11. November, 1936. p. 17. Homemade contrivance has done wonderful service for people living on farm. It is locally known as "Slow John". It probably got its name from fact that it does move rather slowly. Stop watch reveals that it makes about three strokes every two minutes, and yet this simple device has lifted over 3,000,000 gallons of water from spring to farm home in past twelve years. In all that time it has had very little attention. Every bit of it is made of simple parts, most of them on the farm. There are three main parts to the device. Unit No. 1, may be called pumping unit and consists primarily of see-saw with box on either end. One box is filled with rocks or other weighting material. Other box having a trap door in bottom is filled by water conducted to it down long narrow trough from nearby stream. Second unit of this ingenious device consists of smaller see-saw, also with a box of rock as counterweight on one end, and on other end a rod running to plunger of pump. By having cable from first unit attached to upright on second see-saw, second see-saw operates in time with first one. Third unit consists of a pump made from a piece of pipe with foot valve fastened in bottom and a horizontal check valve in line between pump and tank at house. Ordinary 3/4-inch galvanized pipe runs from this pump to tank where water is stored for household and other uses.

Reclamation.

Relate reclamation to use of water and land. Engineering News-Record. v. 117, no. 26. December 24, 1936. p. 910. At meeting of National Reclamation Association at Spokane, November 23 to 24, principal subject was relation of reclamation to national water and land use policies. Plans were laid before meeting to establish a Washington office of the Association.

Refrigerants.

Carbon dioxide in its new field of usefulness. By J.C.Goosmann. Ice and Refrigeration. v. 91, no. 5. November, 1936. p. 391-393. Dehydration of Purified material is indispensable for liquid CO as well as for dry ice consumption. Separators and filters are the first

Refrigerants. (Cont'd).

means of trapping out the water and oil in liquid as well as in gaseous form. Odor removal is a matter of great importance. There are available for this purpose three solid absorbers, activated carbon, silica gel and alumina. The characteristics and functions of each are explained.

"Freon-12" thermal expansion valve requirements. By J.G. Bergdoll. Refrigerating Engineering. v. 32, no. 6. December, 1936. p. 405-408. Rapid strides have been made in perfection of "Freon-12" thermal valves within last few years. Manufacturer and user have cooperated through trying stage of field pioneering during which many weaknesses were encountered. Some of points of failure with their corrections are discussed by the author, along with some further suggestions for obtaining refinement of control and ratings. Twelve requirements of ideal thermal expansion valve are listed in closure.

Thermal properties of ethane. By Ing. R. Plank and J. Kambeitz. Ice and Cold Storage. v. 39, no. 463. October, 1936. p. 159. Refrigerant for very low temperatures.

Refrigeration.

Cold storage of vegetables. By Willis J. Williams. Ice and Refrigeration. v. 91, no. 5. November, 1936. p. 382-384. Detailed results of experiments with cold storage of various vegetables. Temperatures and humidities required for good results.

Four years progress in quick-freezing. By Gardner Poole and M.T. Zaretschenzeff. Ice and Refrigeration. v. 91, no. 5. November, 1936. p. 388-390. Distribution problems of quick-frozen foods have been largely met through improved refrigerator cars mechanically cooled storage cases and refrigerated trucks. Low temperature cabinets and new sales outlets have greatly increased availability.

Graphical method of determining finned coil capacities described. By E.P. Wells. Heating, Piping, and Air Conditioning. v. 8, no. 12. December, 1936. p. 665-671. It is author's purpose to clarify factors affecting performance of finned dehumidifying coils, to show how complete performance of coil may be predicted from few tests, and to describe simplified graphical method of presenting coil data for use of application engineers. His article is based upon several years of laboratory research work on air conditioning coils.

Karlsruhe cryogenic institute. By J.C. Goosmann. Ice and Refrigeration. v. 91, no. 5. November, 1936. p. 394. Broad program outlined activities of institute from very beginning, divided into: 1 - Physiological, chemical research. 2. - Refrigerating machinery and equipment. 3. - Application of low temperature, and 4 - Problems of the refrigerating industry.

Standard refrigeration society symbols. Power Plant Engineering. v. 40, no. 12. December, 1936. p. 733.

Refrigerator Cars.

Canadian refrigerator car has new overhead design. Ice and Refrigeration. v. 91, no. 5. November, 1936. p. 356-358. Additional information on overhead application of refrigerant in refrigerator car placed in service by Canadian Pacific Railway.

Refrigerator Trucks.

Transport of food. By T.M. Herbert. Ice and Cold Storage. v. 39, no. 463. October, 1936. p. 155. Use of refrigerated vans and containers.

Truck body cooling by eutectics. By O.S. McGuffey. Refrigerating Engineering. v. 32, no. 6. December, 1936. p. 401-404, 428-429. Attention is directed to advantages available to users of eutectic type of equipment and to problems associated with supplying refrigeration equipment.

Refrigerators.

Desert coolers. By John I. Mangel. C.R.E.A. News Letter. no. 14. December 10, 1936. p. 12-13. Why popularity of so-called "Desert Cooler" and its operation: 1. They are low in first cost because they may be constructed at home or locally. 2. In area described, temperatures in summer reach 120; have mean maximum of 107° for July and August. Mean minimum of 76°, and cooling season extends over six months of year. Wet bulb temperatures are extremely low for four out of six months, approximately 68°, yet in July and August they reach 82° and remain consistently at 78° for a week at a time. Consequently a cooler of some kind is almost a necessity, and for those who cannot afford refrigeration, evaporative device is about only choice. Well water is practically out of the question at 70° to 75° when it is costly to obtain. 3. Cooler in its present stage is simple in construction and can be assembled of local materials, excepting motor and fan, which are being purchased from mail order stores or salvaged from some motor operated device.

Modern gas operated refrigerator, with respect to design problems. By W.R. Hainsworth. Refrigerating Engineering. v. 32, no. 6. December, 1936. p. 396-400.

Reservoirs.

Building the reservoir. By E.E. Thompson. Montana Farmer. v. 24, no. 7. December 1, 1936. p.3. Gives typical plan view of flood irrigation or stock water reservoir dam.

Rivers.

Influence of diversion on the Mississippi and Atchafalaya rivers: Discussion. By E.F. Salisbury. Proceedings of American Society of Civil Engineers. v. 62, no. 7. September, 1936. p. 1065-1067.

Silos. (Cont'd)

Blasting trench silos. Better Farm Equipment and Methods. v. 9, no.4. December, 1936. p. 20. Institute of Makers of Explosives preparing information concerning construction of these storage pits. It is said to be seldom advisable to do all excavating of a trench silo with explosives, although under the most favorable of conditions it has been done.

Silt.

Modern conceptions of the mechanics of fluid turbulence: Discussion. By Joe W. Johnson. Proceedings of American Society of Civil Engineers. v. 62, no. 6. August, 1836. p. 936-944.

Soils.

Influence of soil management on some physical properties of a soil. By R.S.Stauffer. Journal of Americal Society of Agronomy. v. 28, no. 11. November, 1936. p. 900-906. That poor systems of soil management are accompanied by rapid decline in crop yields, and reduction of essential plant nutrients in soil has been shown conclusively by many studies. Much less information is available to show how physical properties of soil are affected by systems of cropping. It would be desirable to have more information of this kind. Morrow plats at Illinois Agricultural Experiment Station at Urbana, present good opportunity for such a study. Soil on which these plats are located was apparently fairly uniform when experimental work was started, and accurate records of treatment covering long time are available. Furthermore, since very little soil has been removed by erosion, present physical differences in surface soil can be studied as they could not be if much erosion had occurred.

Storage Houses.

Log sweet potato storage house. By C.J. Hutchinson. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 517.

Stream Flow.

Ohio stream flow. By C.V. Youngquist. Engineering Experiment Station News (Ohio State University). v. 8, no. 4. October, 1936. p. 13-14.

Stream Pollution.

English administrative practice in stream pollution control. By Willem Rudolfs. Engineering News-Record. v. 117, no. 26. December 24, 1936. p. 889-891.

Tennessee River.

Navigation and power on the Tennessee. Engineering News-Record. v. 117, no. 25. December 17, 1936. p. 860-865. River canalization planning by Tennessee Valley Authority involves many physical and

Tennessee River. (Cont'd)

economic problems, including relation of dam locations and coordination of operating schedules to needs of navigation, flood protection and power production.

River and region. Engineering News-Record. v. 117, no. 26. December 24, 1936. p. 897-901. Development of Tennessee River for navigation, water conservation, flood control and power involves many regional problems, including cover-cropping and forestation to check erosional silting, and development of recreational and mineral resources.

Tennessee River experiment. Engineering News-Record. v. 117, no. 23. December 3, 1936. p. 771-779. First of five articles on the Tennessee Valley Authority, whose creation in 1933 initiated the first attempt ever made to control and utilize a large river for the benefit of the surrounding region.

Terracing.

Cost of terracing with power equipment. By Deane G. Carter and W.C. Hulburt. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 511-512. Table 1. Farm cost for power-operated terrace construction. Table 2. Association operating costs with power equipment - terrace jobs. Table 3. Summary of costs and returns of terracing jobs. Table 4. Terracing equipment costs and returns - all jobs.

Some engineering aspects of terrace outlets and waterways. By C.L. Hamilton. Agricultural Engineering. v. 17, no. 12. December, 1936. p. 522-525.

Tires.

Comparing the drawbar efficiency of rubber and steel. By L.W. Hurlbut. Implement and Tractor. v. 51, no. 25. December 12, 1936. p. 39, 41. Data presented in article, together with data from more extensive tests with pneumatic tires and steel wheels are presented in Nebraska Experiment Station Bulletin 291.

Cost less and wear longer. By P.W. Litchfield. Better Farm Equipment and Methods. v. 9, no. 4. December, 1936. p. 22. Rubber tires now cost less than 1/4 of what they cost before the war, and last 10 times as long.

Rubber shod tractors. Northwest Farm Equipment Journal. v. 50, no. 12. December, 1936. p. 35-36.

Tractors.

"Ag" engineers analyze small all-purpose tractor. Implement and Tractor. v. 51, no. 25. December 12, 1936. p.16. Bureau of Agricultural Engineering testing laboratory, the little combines, vapor spraying and legume ensiling, are among program features of Society's winter meeting.

Tractors. (Cont'd)

Lower costs and longer life for tractors in winter. By C.E. Packer. Implement and Tractor. v. 51, no. 22. October 31, 1936. p.13,24.

Symposium on the small tractor. Implement and Tractor. v. 51, no.25. December 12, 1936. p. 16-17.

Vaporization.

Table of latent heat of vaporization. By Fred J. Wiegand. Power Plant Engineering. v. 40, no. 7. July, 1936. p. 425.

Ventilation.

Dairy barn ventilation. New England Homestead. v. 109, no. 19. September 12, 1936. p. 39. Emphasizes three reasons for ventilating dairy stables. These are (1) To contribute to general health of animals, and prevent spread of disease; (2) To prevent absorption of stable odors by milk; (3) To lengthen life of building itself. Electric fan systems for ventilation of dairy stables have following advantages as compared with gravity flue systems: (1) They operate effectively at all temperatures, at all seasons, and under all conditions; (2) They are low in first cost; (3) They can be controlled either by hand or by thermostat; (4) They require little room, either within stable or loft above. (5) They are easily, quickly, and cheaply installed.

Electric ventilation for dairy barn. By R. Proctor. New England Homestead. v. 109, no. 20. September 26, 1936. p. 5, 10. Ventilation should never be attempted without first making sure that sufficient insulation was provided in construction of stable to permit required number of air changes without lowering stable temperature to point where production and feeding factors would be adversely affected.

Electrical ventilation for livestock structures. By C.R. Jefferson and D.G. Ebinger. Quarterly Bulletin (Michigan State College Agricultural Experiment Station) v. 19, no. 2. November, 1936. p. 81-97. Advantages of electrical system are: 1. Positive operation. 2. Simple installation. 3. Economy. Table 1. Gives size and number of fans, power requirements, and operating costs for various sized dairy barns.

Water Analysis.

Note on regional distribution of magnesium in river and lake waters of the United States. By S.B. Detwiler. American Potato Journal. v. 13, no. 6. June, 1936. p. 156-159.

Water Cooling.

Cooling hot well water for domestic consumption. Engineering News-Record. v. 117, no. 26. December 24, 1936. p. 890. System finally adopted consists of coils, over basin, through which water passes to be cooled. Film of water passing over coils cools them by evaporation. Cooling water is delivered through headers to

Water Cooling. (Cont'd)

specially designed troughs, which distribute water evenly over coils. Through this arrangement, temperature of water going into main is reduced by about 30 degrees F. This artesian well has flow of 1,800 gallons per minute.

Water Heating.

Cows don't like ice-cold water. By D.L. Fourt. Better Farm Equipment and Methods. v. 9, no. 4. December, 1936. p. 18-19. Winter season proper time to analyze water needs of dairy cows.

Water Rights.

Groundwater rights. By G.E.P. Smith. Arizona Producer. v. 15, no.19. December 15, 1936. p. 14. Arizona law tangled, does not protect those who develop in good faith.

Water Supply.

Artesian water in the Florida Peninsula. By V.T. Stringfield. Washington, D.C. 1936. 195p. U.S. Geological Survey. Water-supply paper no.773-C.

Crops and weather. By B.W. Snow. Farm Journal. v. 60, no. 11. November , 1936. p. 21. Drought in the central valleys broken by degrees. Planting conditions favorable. Corn a very short crop. Water shortage continues West of 100° and imports of grain will continue. Reports from the staff of 1500 crop correspondents.

Farm pond and its uses. By W.H. McPheters. Farm and Ranch. v. 55, no. 19. October 1, 1936. p. 4, 11-12. Adequate water supply will not only serve the farm's needs, but will aid National Flood Control program. Gives top and cross-section views to show how dam and spillway for farm pond are built.

Protect our water resources. Montana Farmer. v. 24, no. 7. December 1, 1936. p. 3, 24. National Reclamation Association outlines constructive development program for West.

Record water surplus for Big Wood project. Idaho Farmer. v. 54, no.18. September 3, 1936. p. 18. Never before have reservoirs had such large carry-over so early in season as to insure a full supply of water following year. In fact that project has frequently experienced severe water shortages, so that its development and expansion had been retarded for many years. Similar conditions have existed on most other projects of southern Idaho this year, resulting from last winter's heavy snow supply on watersheds of western Wyoming and eastern Idaho in Teton mountains, the sawtooths of central Idaho and Minidoka mountains of southern Idaho, all bordering Snake river system

Stock ponds in the great plains drought area. By W.C. Lowdermilk and F.F. Barnes. Soil Conservation. v. 2, no. 3. September 1936. p. 44-47, 58.

Water Supply. (Cont'd)

Subsoil waters of Newlands (Nev.) field station. By Carl S. Scofield, C. Lloyd Moon and Elmer W. Knight. 1936. 30p. U.S. Department of Agriculture. Technical Bulletin no. 533.

Supplementary report on the ground-water supplies of the Atlantic City region. By Henry C. Barksdale, Raymond W. Sundstrom, and Maurice S. Brunstein. 1936. 139p. New Jersey. State Water Policy Commission. Special Report no. 6.

Surface water supply of New Jersey: stream flow records, October 1, 1928 to September 30, 1934. By O.W. Hartwell. 1936. 253p. New Jersey. State Water Policy Commission. Special Report no. 5.

Surface water supply of the United States, 1935: Part II. Pacific slope basins in California. By Nathan C. Grover and others, prepared in cooperation with the states of California and Oregon. Washington, D.C., 1936. 361p. U.S. Geological Survey. Water-Supply Paper no. 791.

Upper Rio Grande problem under study. Engineering News-Record. v. 117, no. 10. September 3, 1936. p. 331. Water resources, present uses and possible transmountain diversions are being investigated to lay the foundation for an interstate compact on water.

Water supply and sewage disposal necessary to farm homes. Wisconsin Agriculturist and Farmer. v. 63, no. 23. November 7, 1936. p. 14-15, 19.

Weeds.

Application of sulfuric acid for weed control. By O.C. French. Agricultural Engineering. v. 17, no. 8. August. 1936. p. 339-340. Objectives in developing sprayer for sulfuric acid were three-fold: (1) to eliminate necessity of handling concentrated acid and mixing it with water prior to spraying, (2) to eliminate necessity of pumping dilute acid, and (3) to make use of our present orchard type sprayers as basis for unit.

Burning up that Johnson. Arizona Producer. v. 15, no. 15. October 15, 1936. Water users double equipment for killing weeds on canals and laterals.

Drainage aids fluke control. Oregon Farmer. v. 59, no. 17. August 20, 1936. p. 6.

Weirs.

Discharge of three commercial Cippoletti weirs. By Robert Bowman Van Horn. 1935. 22p. University of Washington. Engineering Experiment Station Bulletin no. 85.

Effect of an end sheet pile on the pressure distribution under a weir floor and on the exit gradient. By N.E. Bose and Harban Lal Uppal.

Lahore, printed by the Superintendent, Government Printing, Punjab, 1936. 22p. Punjab Irrigation Research Institute Research Publication. v.2, no. 14.

Pressure under weirs - depressed floors with and without sheet piles. By V. I. Vaidhianathan, Gurdas Ram and E. McKenzie Taylor. Lahore. Printed by the Superintendent, Government Printing, Punjab, 1936. 3p. Punjab Irrigation Research Institute. Research Publication. v. 5, no. 6.

Wells.

Farm wells. By A.G. Tyler. Hoard's Dairyman. v. 81, no. 18. September 25, 1936. p. 472.

Water levels and artesian pressure in observation wells in the United States in 1935. Washington, D.C., 1936. 268p. U.S. Geological Survey. Water-supply paper no. 777.

Windmills.

Air-cooled wind-power plant produces more current. Popular Mechanics. p.66, no. 4. October, 1936. p. 549. As result of its design which permits air cooling of generator inside and out, latest wind-driven power plant produces more electricity according to its makers. Offset so that it will fold out of wind at velocities of 30 to 32 miles an hour, plant is protected against storms. This feature also prevents overcharging when wind is high.

The S-Rotor current wheel. By L.S. Eaton. Sugar News. v. 17, no. 5. May, 1936. p. 23-26.

Wind-electric power for small Oklahoma farms. By Arnold Benson and E.B. Kurtz. 1936. 16p. Oklahoma Engineering Experiment Station Publication no. 29.

Wood.

List of publications on the mechanical properties and structural uses of wood and wood products. U.S. Forest Products Laboratory. Madison, Wisconsin, 1936. 24p. mimeographed.

Wood Preservation.

Here's how to make the posts last longer. Oregon Farmer. v. 59, no. 23. November 12, 1936. p. 3.

Life of wood fence posts depends on conditions. Northwest Farmer. v. 5, no.9. January, 1937. p. 15. Under circumstances in which untreated posts are used, their life varies widely, and it is impractical to name average life figures that have general application.

Synthetic resins in varnishes for wood protection. By Robert J. Moore. Mechanical Engineering. v. 58, no. 10. October, 1936. p. 621-624, 634.